

## **Revision of Testing Methods for Polystyrene Plastic and Rubber Containers and Packages Intended for Food**

### **1. Purpose and background**

Containers and packages for food are regulated by the Specifications and Standards for Food, Food Additives, Etc. (Ministry of Health and Welfare Notification No. 370, 1959).

This time the Ministry of Health, Labour and Welfare (MHLW) is going to revise the notification to modify the material tests for 1) containers and packages made of plastic whose main ingredient is polystyrene (polystyrene plastic) and 2) rubber containers and packages.

In recent years, new materials have been developed for polystyrene plastics. The current material test method cannot be applied to these new materials. The MHLW has decided to change the material test method to enable testing new materials.

The current material test methods for rubber containers and packages have some problems with analytical accuracy, such as low recovery rate. The MHLW has solved these problems to improve the analytical accuracy.

### **2. Outline of revision**

#### **1. Material test method for polystyrene plastic containers and packages**

##### Volatile matter

According to the current method, the volatile matter is determined by analyzing a solution of the sample dissolved in tetrahydrofuran by gas chromatography. However, styrene thermoplastic elastomer (STPE) and syndiotactic polystyrene (SPS) are insoluble in tetrahydrofuran. The revised method uses dichlorobenzene as a solvent instead of tetrahydrofuran and headspace gas chromatography for determination in the above occasion.

#### **2. Material test methods for rubber containers and packages**

##### Cadmium and lead

In testing of cadmium and lead in silicone rubber, the current method provides low recovery rate because cadmium and lead are adsorbed with silicon dioxide that is produced in the incineration process of the sample. The revised method uses an alkali-fusion method, which is capable of not only removing silicon dioxide but also providing high analytical accuracy. The revised method will be also applied to tests for rubber baby bottle nipples.

#### 2-Mercaptoimidazoline

The current method using thin layer chromatography has several problems; for example, the method cannot quantitatively measure 2-mercaptoimidazoline and requires complicated procedures and long time to complete, and the detection limit is high. To solve these problems, the method will be replaced with high-performance liquid chromatography. In addition, the current extraction method using the Soxhlet system will be replaced by a simplified method in which the sample is just submerged in a solvent over night.

### **3. Date of enforcement**

Requirements shall apply to the products manufactured or imported after the six months period beginning on the date of promulgation.